

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently Amended) A semiconductor device comprising:

a semiconductor substrate including a main surface;

a MOSFET including a double gate structure provided on a side of the main surface of the semiconductor substrate, the double gate structure comprising top and bottom gate electrodes, the bottom gate electrode being located at a lower level than the main surface; and

an isolation region for isolating the MOSFET from other elements comprising a trench provided on the side of the main surface of the semiconductor substrate and an insulator provided in the trench, the isolation region having a region in the trench around the MOSFET, the region having a deeper bottom than other regions in the trench.

2. (Currently Amended) The semiconductor device according to claim 1, wherein the bottom gate electrode is provided in the semiconductor substrate, a part of the side of the main surface of the semiconductor substrate is placed between the top gate electrode and bottom gate electrode, and the MOSFET further comprises: a bottom-gate electrode provided in the semiconductor substrate;

~~a top gate electrode provided on the semiconductor substrate above the bottom-gate electrode;~~

a top gate insulating film provided between the top gate electrode and the semiconductor substrate; and

a bottom gate insulating film provided between the semiconductor substrate below the top gate electrode and the bottom gate electrode.

3. (Original) The semiconductor device according to claim 1, wherein the MOSFET further comprises a side gate electrode and a side gate insulating film which are provided in the region having the deeper bottom than the other regions in the trench around the MOSFET, and a part of the insulator is provided in the region having the deeper bottom than the other regions under the side gate electrode.

4. (Currently Amended) A ~~[[The]]~~ semiconductor device ~~according to claim 1~~ comprising:

a semiconductor substrate;

a MOSFET including a double gate structure, the double gate structure including a top gate electrode and a bottom gate electrode, provided on the semiconductor substrate; and

an isolation region for isolating the MOSFET from other elements comprising a trench provided on a surface of the semiconductor substrate and an insulator provided in the trench, the isolation region having a region in the trench around the MOSFET, the region having a deeper bottom than other regions in the trench,

wherein the semiconductor substrate is provided with at least one empty space ~~an empty space therein~~, and the bottom gate electrode and ~~[[the]]~~ a bottom gate insulating film are provided in the at least one empty space.

5. (Currently Amended) The semiconductor device according to claim 4, wherein the trench opens a part of an upper wall of the at least one empty space, and a ~~[[the]]~~ side gate insulating film and a ~~[[the]]~~ side gate electrode are successively provided on ~~[[the]]~~ a side of the semiconductor substrate on the at least one empty space opened by the trench.

6. (Currently Amended) The semiconductor device according to claim 5, further comprising a top gate insulating film formed between the top gate electrode and the semiconductor substrate, wherein the bottom gate insulating film, the side gate insulating film, and the top gate insulating film are unified.

7. (Currently Amended) The semiconductor device according to claim 6, wherein the bottom gate insulating film, the side gate insulating film, and the top gate insulating film are formed of a common thermal oxide film.

8. (Currently Amended) The semiconductor device according to claim 5, wherein the bottom gate electrode, the side gate electrode, and the top gate ~~electrodes~~ electrode are unified.

9. (Currently Amended) The semiconductor device according to claim 6, wherein the bottom gate electrode, the side gate electrode, and the top gate ~~electrodes~~ electrode are unified.

10. (Currently Amended) The semiconductor device according to claim 7, wherein the bottom gate electrode, the side gate electrode, and the top gate ~~electrodes~~ electrode are unified.

11. (Currently Amended) The semiconductor device according to claim 8, wherein the bottom gate electrode, the side gate electrode, and the top gate ~~electrodes~~ electrode are formed of a common conductive film.

12. (Original) The semiconductor device according to claim 11, wherein the common conductive film is a semiconductor film containing an impurity or film containing metal.

13. (Currently Amended) The semiconductor device according to claim 4, wherein a part of the at least one empty space remains ~~space which is failed to be filled~~ unfilled ~~by~~ the bottom gate electrode and the bottom gate insulation film.

14. (Currently Amended) The semiconductor device according to claim 4, wherein the at least one empty space comprises an upper wall which includes a flat region.

15. (Currently Amended) The semiconductor device according to claim 5, ~~further comprises a~~ wherein the at least one plurality of empty space ~~spaces in claim 4 provided in the semiconductor substrate, the plurality of empty spaces being~~ is arranged in a thickness direction of the semiconductor substrate, and ~~[[a]]~~ the bottom gate

insulating film and ~~[[a]]~~ the bottom gate electrode ~~in claim 4~~ are provided in ~~each of the~~
at least one ~~plurality of empty spaces~~ space.

16. - 20. (Canceled)

21. (New) The semiconductor device according to claim 1, wherein the whole of the
region having the deeper bottom is located under the top gate electrode.